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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/549,908	09/20/2005	Peter Larsson	4147-130	4686

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EXAMINER

NGUYEN, TUAN HOANG

ART UNIT PAPER NUMBER

2618

DATE MAILED: 11/06/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

10/549,908

Applicant(s)

LARSSON ET AL.

Examiner

Tuan H. Nguyen

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 20 September 2005.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-31 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-6 and 8-31 is/are rejected.
- 7) ☒ Claim(s) 7 is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413). |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | Paper No(s)/Mail Date. _____ |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08) | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

Priority

1. Receipt is acknowledged of papers submitted under 35 U.S.C. 119(a)-(d), which papers have been placed of record in the file.

Information Disclosure Statement

2. The information disclosure statement (IDS) submitted on 09/20/2005 and 05/15/2006 has been considered by Examiner and made of record in the application file.

Claim Rejections - 35 USC § 102

3. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

4. Claims 1- 6, 8-11, 15-21, 23-26, and 30-31 are rejected under 35 U.S.C. 102(b) as being anticipated by Dankberg et al. (US PAT. 5,596,439 hereinafter "Dankberg").

Consider claims 1 and 16, Dankberg teaches detecting signal information in a wireless relaying network, comprising: storing, as a priori known signal information, previously received signal information representative of a first set of information including at least one data unit to be transmitted in total more than one time over at least one link (col. 2 lines 29-54); subsequently receiving signal information representative of a second set of information, wherein a transmission of said at least one data unit interferes with the reception of second set of information (see fig. 6 col. 4 lines 6-34); and detecting at least part of second set of information by interference cancellation based on the received signal information representative of second set of information and at least part of said previously stored a priori known signal information (see fig. 6 col. 4 lines 6-34).

Consider claims 2 and 17, Dankberg further teaches interference cancellation includes at least one of explicit and implicit interference cancellation (col. 5 lines 45-57).

Consider claims 3 and 18, Dankberg further teaches at least one data unit is to be transmitted in total more than one time over more than one link (col. 2 lines 29-54).

Consider claims 4 and 19, Dankberg further teaches wireless relaying network includes at least one of a wireless multi-hop network, a cooperative relaying network and a repeater-based network (col. 5 line 58 through col. 6 line 19).

Consider claims 5 and 20, Dankberg further teaches wireless relaying network is a wireless multi-hop network (col. 6 lines 11-19).

Consider claims 6 and 21, Dankberg further teaches detecting step involves one of single-user detection and multi-user detection (see fig. 2 col. 1 lines 41-52).

Consider claims 8 and 23, Dankberg further teaches step of detecting at least part of said second set of information comprises the steps of: removing a priori known signal information from the received signal information to generate a residual signal (col. 5 lines 9-11); and processing said residual signal to detect at least part of said second set of information (col. 5 line 58 through col. 6 line 10).

Consider claims 9 and 24, Dankberg further teaches a priori known signal information includes previously received baseband signal information, and said step of detecting at least part of said second set of information comprises the step of jointly processing said previously received baseband signal information and subsequently received baseband signal information to detect at least part of said second set of information (see fig. 2 col. 1 lines 41-52).

Consider claims 10 and 25, Dankberg further teaches previously received baseband signal information relate to a number of previous communication instances and the subsequently received baseband signal information relates to the current

communication instance (col. 3 lines 21-35), and said previously received baseband signal information and said subsequently received baseband signal information are processed together with complex channel gain information to determine an estimation of at least one detected data packet (col. 4 lines 6-35).

Consider claims 11 and 26, Dankberg further teaches a priori known signal information includes previously received and detected information (col. 2 lines 29-40).

Consider claims 15 and 30, Dankberg further teaches continuously updating said a priori known signal information by incorporating newly detected information and removing outdated signal information (col. 5 lines 45-57).

Consider claim 31, Dankberg further teaches arrangement is implemented in a network node of said wireless relaying network (col. 1 lines 53-60).

Claim Rejections - 35 USC § 103

5. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

6. Claims 12 and 27 are rejected under 35 U.S.C. 103(a) as being unpatentable over Dankberg et al. (US PAT. 5,596,439 hereinafter "Dankberg") in view of Ohki (U.S. PAT. 5,963,559).

Consider claims 12 and 27, Dankberg teaches detecting signal information in a wireless relaying network.

Dankberg does not explicitly show that previously received and detected information includes previously overheard information.

In the same field of endeavor, Ohki teaches previously received and detected information includes previously overheard information (col. 9 lines 31-42).

Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to use, previously received and detected information includes previously overheard information, as taught by Ohki, in order to provide a method which it is possible to do with no surplus overhead on transmitting frames.

7. Claims 13-14 and 28-29 are rejected under 35 U.S.C. 103(a) as being unpatentable over Dankberg et al. (US PAT. 5,596,439 hereinafter "Dankberg") in view of Amou et al. (U.S. PAT. 7,046,688 herein after "Amou").

Consider claims 13 and 28, Dankberg teaches detecting signal information in a wireless relaying network.

Dankberg does not explicitly show that step of detecting at least part of said second set of information is based on transmission schedule information.

In the same field of endeavor, Amou teaches step of detecting at least part of said second set of information is based on transmission schedule information (col. 13 lines 30-45).

Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to use, step of detecting at least part of said second set of information is based on transmission schedule information, as taught by Amou, in order to provide a packet scheduler which can realize guarantee in bandwidth assignment and fair vacant bandwidth assignment while preventing erroneous operation deriving from deviation of a scheduled packet output time from the real time caused by calculation error in weighted fair Queuing calculation.

Consider claim 14, Amou further teaches first set of information includes a number of data packets, and said transmission schedule information includes information on which of the data packets that are to be transmitted when the signal information representative of said second set of information is received such that an appropriate part of said previously stored a priori known signal information is exploited in said detecting step (col. 26 lines 23-40).

Consider claim 29, Amou further teaches first set of information includes a number of data packets, and said transmission schedule information includes information on which of the data packets that are to be transmitted when the signal information representative, of said second set of information is received, and said

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means for detecting comprises means for selecting, based on said transmission schedule information, an appropriate part of said previously stored a priori known signal information for use in detecting at least part of said second set of information (col. 26 lines 23-40).

Allowable Subject Matter

8. Claims 7 and 22 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

Conclusion

9. Any response to this action should be mailed to:

Mail Stop_____ (Explanation, e.g., Amendment or After-final, etc.)

Commissioner for Patents

P.O. Box 1450

Alexandria, VA 22313-1450

Facsimile responses should be faxed to:

(571) 273-8300

Hand-delivered responses should be brought to:

Customer Service Window

Randolph Building
401 Dulany Street
Alexandria, VA 22313

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Tuan H. Nguyen whose telephone number is (571) 272-8329. The examiner can normally be reached on 8:00Am - 5:00Pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Maung Nay A. can be reached on (571) 272-7882. The fax phone number for the organization where this application or proceeding is assigned is (571) 273-8300.

Information Consider the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

Tuan Nguyen *T.N.*
Examiner
Art Unit 2618

Quochien B. Vuong 10/27/06
QUOCHIEN B. VUONG
PRIMARY EXAMINER